

LISTING OF CLAIMS:

The following listing of claims replaces all previous versions and listings of claims in the present application.

1. (Currently amended) An abnormality detecting apparatus for ~~a vibration-type angular velocity sensor that detects~~detecting an abnormal condition of ~~the~~a vibration-type angular velocity sensor, the apparatus comprising:

frequency component extracting means for extracting, from a predetermined signal, a specific frequency component determined based on at least one of a driving system resonance frequency related to a driving system of said angular velocity sensor and a sensing system resonance frequency related to a sensing system of said angular velocity sensor, having the possibility that said angular velocity sensor may producecapable of producing an erroneous output when receiving said specific frequency component of the predetermined signal, based on an acceleration signal detected by an acceleration sensor disposed in the vicinity of said vibration-type angular velocity sensor; and

judging means for comparing a level of said specific frequency component extracted by said frequency component extracting means with a predetermined level and ~~producing~~outputting a signal notifying of an abnormal condition of said angular velocity sensor when the level of said specific frequency component is larger than said predetermined level.

2. (Currently amended) The abnormality detecting apparatus for ~~a vibration-type angular velocity sensor~~ in accordance with claim 1, wherein said specific frequency component ~~having the~~

~~possibility that said angular velocity sensor may produce an erroneous output is a~~includes one or more of: the driving system resonance frequency relating to a driving system of said angular velocity sensor and/or a difference frequency between said driving system resonance frequency and a the sensing system resonance frequency relating to a sensing system of said angular velocity sensor.

3. (Canceled)

4. (Currently amended) An abnormality detecting method for ~~a vibration-type angular velocity sensor that detects~~detecting an abnormal condition of ~~the~~a vibration-type angular velocity sensor, the method comprising the steps of:

extracting, from a predetermined signal, a specific frequency component determined based on at least one of a driving system resonance frequency related to a driving system of said angular velocity sensor and a sensing system resonance frequency related to a sensing system of said angular velocity sensor, having the possibility that said angular velocity sensor may produce~~capable of producing~~an erroneous output when receiving said specific frequency component of the predetermined signal, based on an acceleration signal detected by an acceleration sensor disposed in the vicinity of said vibration-type angular velocity sensor; and

comparing a level of said specific frequency component extracted in said frequency component extracting step with a predetermined level and producing a signal notifying of an abnormal condition of said angular velocity sensor when the level of said specific frequency component is larger than said predetermined level; and

outputting said signal notifying of the abnormal condition of said angular velocity sensor when the level of said specific frequency component is larger than said predetermined level.

5. (Currently amended) The abnormality detecting method ~~for a vibration-type angular velocity sensor~~ in accordance with claim 4, wherein said specific frequency component ~~having the possibility that said angular velocity sensor may produce an erroneous output is a~~includes one or more of the driving system resonance frequency ~~relating to a driving system of said angular velocity sensor and/or~~ a difference frequency between said driving system resonance frequency and ~~a the~~ sensing system resonance frequency ~~relating to a sensing system of said angular velocity sensor.~~

6. (Canceled)

7. (Currently amended) The abnormality detecting method ~~for a vibration-type angular velocity sensor~~ in accordance with claim 4, wherein said steps are executed by at least one of an electric circuit having the capability of executing hardware processing ~~or by~~and a computer having the capability of executing software processing ~~according to a predetermined algorithm.~~

8. (Currently amended) An abnormality detecting program executed in a computer for ~~realizing an abnormality detecting method for a vibration-type angular velocity sensor that detects~~detecting an abnormal condition of ~~the~~a vibration-type angular velocity sensor, said abnormality detecting method comprising the steps of:

extracting, from a predetermined signal, a specific frequency component determined based on at least one of a driving system resonance frequency related to a driving system of said angular velocity sensor and a sensing system resonance frequency related to a sensing system of said angular velocity sensor, ~~where having the possibility that said angular velocity sensor may produce~~ capable of producing an erroneous output when receiving said specific frequency component of the predetermined signal, ~~based on an acceleration signal detected by an acceleration sensor disposed in the vicinity of said vibration-type angular velocity sensor~~; and

comparing a level of said specific frequency component extracted in said frequency component extracting step with a predetermined level and producing a signal notifying of an abnormal condition of said angular velocity sensor when the level of said specific frequency component is larger than said predetermined level; and

outputting said signal notifying of the abnormal condition of said angular velocity sensor when the level of said specific frequency component is larger than said predetermined level.

9. (Currently amended) A vehicle control system comprising an abnormality detecting apparatus that detects an abnormal condition of a vibration-type angular velocity sensor, an actuator that executes a brake control of said a vehicle, and a vehicle stability control apparatus that manages said brake control executed by said actuator, wherein:

said abnormality detecting apparatus ~~comprising~~ comprises:

frequency component extracting means for extracting, from a predetermined signal, a specific frequency component determined based on at least one of a driving system resonance frequency related to a driving system of said angular velocity sensor and a sensing system resonance frequency related to a sensing system of said angular velocity sensor, having

~~the possibility that~~ said angular velocity sensor ~~may produce~~capable of producing an erroneous output when receiving said specific frequency component of the predetermined signal, based on an acceleration signal detected by an acceleration sensor disposed in the vicinity of said vibration-type angular velocity sensor; and

judging means for comparing a level of said specific frequency component extracted by said frequency component extracting means with a predetermined level and ~~producing~~outputting a signal notifying of an abnormal condition of said angular velocity sensor when the level of said specific frequency component is larger than said predetermined level, and

said vehicle stability control apparatus limits said brake control executed by said actuator when said vehicle stability control apparatus receives ~~the said~~ signal notifying of the abnormal condition of said angular velocity sensor from said abnormality detecting apparatus.

10. (Currently amended) An abnormality detecting apparatus for a vibration-type angular velocity sensor that has a vibrator element driven at a predetermined resonance frequency and detects an angular velocity based on a displacement of said vibrator element in a sensing direction normal to a vibrating direction of said vibrator element, comprising:

first judging means for detecting a frequency at which said vibrator element causes a displacement in said sensing direction and checks whether or not the detected frequency is within a specific frequency range determined based on at least one of the predetermined resonance frequency of the vibrator element along said vibration direction and a sensing system resonance frequency of the vibrator element along said sensing direction, having the possibility that said angular velocity sensor ~~may produce~~capable of producing an erroneous output when receiving a specific frequency component of the specific frequency range; and

second judging means for ~~generating~~outputting an abnormality signal when it is judged by said first judging means that the detected frequency is within said specific frequency range.

11. (New) The abnormality detecting apparatus in accordance with claim 1, wherein the predetermined signal includes an acceleration signal detected by an acceleration sensor disposed in the vicinity of said vibration-type angular velocity sensor.

12. (New) The abnormality detecting apparatus in accordance with claim 11, wherein said vibration-type angular velocity sensor and said acceleration sensor are installed in the same casing.

13. (New) The abnormality detecting method in accordance with claim 4, wherein the predetermined signal includes an acceleration signal detected by an acceleration sensor disposed in the vicinity of said vibration-type angular velocity sensor.

14. (New) The abnormality detecting method in accordance with claim 13, wherein said vibration-type angular velocity sensor and said acceleration sensor are installed in the same casing.